Bioengineering of novel 3D scaffolds for cell-based therapy in heart failure and diabetes mellitus

Propositions Ph.D. thesis H.P. Sondermeijer.

1. The use of PVDF membrane filtration (of alginate) is an economical solution, which reduces waste and results in alginate with clinically acceptable purity levels while remaining non-immunogenic. - This thesis.

2. Purified cyclic RGDfK peptide-modified 3D alginate scaffolds are biocompatible and nonimmunogenic, enhance cell viability, promote angiogenesis, and may be used as a means to deliver cells to myocardial infarct areas to improve neovascularization and cardiac function. - This thesis.

3. The use of a non-hepatic transplant site may avoid intrahepatic complications and permit the use of PET imaging to measure and follow transplanted beta-cell mass in real time. - This thesis.

4. Myocardial cell-specific disruption of CXCR4/SDF-1 interactions could prove helpful in improvement of the extracellular milieu and enhance the results of cell transplantation. - This thesis.

5. …our goal is *not* to monopolize or "ring-fence" iPS cell technology, but rather to ensure that it is widely available for development by other researchers through reasonable non-exclusive patent licensing arrangements. - Shinya Yamanaka.

6. Despite major improvements in the treatment of virtually all cardiac disorders, heart failure (HF) is an exception, in that its prevalence is rising, and only small prolongations in survival are occurring. - Eugene Braunwald.

7. People often think I'm a faker, but I'm usually honest, in a certain way - in such a way that often nobody believes me! - Richard Phillips Feynman.

8. …this is not the end…it is not even the beginning of the end, but it is perhaps the end of the beginning. - Winston Churchill.

9. In the middle of difficulty lies opportunity. - Albert Einstein.

10. The only thing I know is that I know nothing. - Socrates.

11. But through it all, when there was doubt, I ate it up, and spit it out, I faced it all, and I stood tall. And did it my way. - Francis Albert "Frank" Sinatra.